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10/591,456	09/01/2006	Hiroshi Ogura	071971-0730	2324

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EXAMINER	
ELBIN, JESSE A	

ART UNIT	PAPER NUMBER
2614	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/591,456	OGURA ET AL.	
	Examiner	Art Unit	
	JESSE A. ELBIN	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *27 October 2008; 22 December 2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. The objection of claims 2-3 and 7-8 under 37 CFR 1.75(c), as being of improper dependent form is withdrawn and Examiner apologizes for any inconvenience associated with the errant objection. Upon further consideration, claims 2-3 and 7-8, as originally filed, did further limit the system of independent claims 1 and 6, respectively. Use of silicon dioxide as the "first insulating film" and silicon nitride as the "second insulating film" does alter the metes and bounds of the independent claims.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Agneus et al. (US Patent (4,142,073).

Regarding claim 1, Agneus teaches an electret condenser ("electret microphone"; '073 title), comprising: a first electrode ('073 #3; "metallic base plate 3"), a second electrode ('073 #4; "metallic layer 4"); a first insulating film ('073 #2; "second plastic film 2) which is formed between the first electrode (#3) and the second electrode (#4) and is electretized ("the other plastic film 2 is polarized so as to contain electret

charges"; '073 col. 1 lines 60-61), and a second insulating film ('073 #1; "first plastic film 1") formed so as to cover upper, lower and side surfaces of the first insulating film (*see Figure wherein the* "second insulating film" *covers the entirety of the* "first insulating film" *such that the* "upper, lower and side surfaces" *are all inherently covered*), wherein the first insulating film (#2) covered with the second insulating film (#1) is formed on the second electrode (#4).

Regarding claim 4, Agneus remains as applied above.

Agneus further teaches the second electrode (#4), the first insulating film (#2), and the second insulating film (#1) compose a vibrating film ("a movable electrode"; '073 col. 1 line 55).

Regarding claim 5, Agneus remains as applied above.

Agneus further teaches a shape in plan of the first insulating film (#2) is smaller than a shape in plan of the vibrating film (*see Figure*), and the first insulating film (#2) is arranged at a central part of the vibrating film ("plastic film 2…is concentrically fixed to this by the metalized plastic film 1"; '073 col. 2 lines 30-32).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Loeppert (US Patent 5,490,220 ('220)) (already of record) in view of Takeuchi (US Patent 7,039,202 ('202)) (already of record).

Regarding claim 1, Loeppert teaches an electret condenser (solid state condenser; '220 title), comprising: a first electrode ("a backplate that constitutes a fixed electrode"; '220 Fig. 7 #64 and abstract); a second electrode ("The diaphragm...constitutes a moveable electrode"; '220 Fig. 7 #44 col. 2 lines 40-42); a first insulating film ("silicon nitride layer"; '220 Fig. 7 #24 and col. 3 line 50) which is formed between the first electrode ('220 Fig. 7 #64) and the second electrode ('220 Fig. #44).

While Loeppert does not explicitly teach the first insulating film being electretized, Loeppert does teach typical condenser microphones requiring a voltage bias element; which is commonly an electret, for the benefit of creating a permanent voltage bias.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the first insulating film taught by Loeppert to be electretized for the benefit of creating a permanent voltage bias in the microphone.

Loeppert does not explicitly teach a second insulating film formed so as to cover upper, lower and side surfaces of the first insulating film, wherein the first insulating film covered with the second insulating film is formed on the second electrode.

In the same field of endeavor, Takeuchi teaches a second insulating film ('202 Figs. 2-4 'PF' and 'IF2') formed so as to cover upper, lower and side surfaces of the first [electrode] (e.g. 'IL2'; '202 Figs. 2, 4) for the benefit of protecting the electrode from environmental influence.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the electret condenser taught by Loeppert with the additional insulating film taught by Takeuchi for the benefit of protecting the electrode from environmental influence.

While neither Loeppert nor Takeuchi explicitly teach the second insulating film covering the first insulating film on the second electrode, the combination of the two results in that structure. Loeppert and Takeuchi both teach several configurations of the electrodes (i.e. Loeppert; '220 Figs. 6-7 and Takeuchi; '202 Figs. 2-4) wherein fabrication of the electrode structure comprising 'IL2', 'IF1', 'IF2', and 'PF' (Takeuchi;

'202 Fig. 2) as the diaphragm illustrated in Loeppert Fig. 7 (e.g. #24, 44) would result in an electret (first insulating film) covered by a second insulating film on the second electrode.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Loeppert (US Patent 5,490,220 ('220)) (already of record) in view of Takeuchi (US Patent 7,039,202 ('202)) (already of record) as applied to claim 1 above, and further in view of Majamaa (Effect of Oxidation Temperature on the Electrical Characteristics of Ultrathin Silicon Dioxide Layers Plasma Oxidized in Ultrahigh Vacuum) (henceforth referred to as *Majamaa*).

Regarding claim 2, the combination of Loeppert and Takeuchi remains as applied above.

Takeuchi further teaches the insulating films being a silicon dioxide film ("The insulating films IF1 and IF2 are, for example, an oxide film or nitride film"; '202 col. 2 lines 8-9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a silicon dioxide film as taught by Takeuchi as the first insulating film taught by the combination of Loeppert and Takeuchi for the benefit of using common semiconductor manufacturing processes to create the microphone

Neither Loeppert nor Takeuchi explicitly teach the film being grown in an atmosphere at a temperature in a range between 500 °C and 800 °C, both inclusive.

In the same field of endeavor, Majamaa teaches growth of silicon dioxide layers in a temperature range from "room temperature to 800 °C" (*Majamaa* abstract) for the benefit of growing a specific oxidation layer thickness.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the temperature range taught by Majamaa in the growth of a silicon oxide layer as taught by the combination of Loeppert and Takeuchi for the benefit of growing a specific oxidation layer thickness.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Loeppert (US Patent 5,490,220 ('220)) (already of record) in view of Takeuchi (US Patent 7,039,202 ('202)) (already of record) as applied to claim 1 above, and further in view of Ross (Effects of Silicon Nitride Growth Temperature on Charge Storage in the MNOS Structure) (henceforth referred to as *Ross*).

Regarding claim 3, the combination of Loeppert and Takeuchi remains as applied above.

Takeuchi further teaches the insulating films being a silicon nitride film ("The insulating films IF1 and IF2 are, for example, an oxide film or nitride film"; '202 col. 2 lines 8-9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a silicon dioxide film as taught by Takeuchi as the first insulating film

taught by the combination of Loeppert and Takeuchi for the benefit of using common semiconductor manufacturing processes to create the microphone

Neither Loeppert nor Takeuchi explicitly teach the film being grown in an atmosphere at a temperature in a range between 600 °C and 800 °C, both inclusive.

In the same field of endeavor, Ross teaches growth of silicon nitride in the temperature range of 650 °C to 1100 °C for the benefit of varying the charge stored in the nitride layer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the temperature range taught by Ross to grow a silicon nitride layer as taught by the combination of Johannsen and Takeuchi for the benefit of varying the charge stored in the nitride layer.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johannsen et al. (US PGPub 2002/0181725 ('725)) in view of Takeuchi (US Patent 7,039,202 ('202)) (already of record).

Regarding claim 6, Johannsen teaches an electret condenser ("condenser microphone"; '725 title), comprising: a first electrode ('725 Fig. 2 #3), a second electrode ('725; Fig. 2 #4); and a first insulating film ('725 #5) which is formed between the first electrode (#3) and the second electrode (#4), wherein a lower surface of the first insulating film (#5) is covered with the second electrode ('725 Fig. 2).

Johannsen does not explicitly teach the first insulating film being electretized; nor the upper and side surfaces of the first insulating film being covered with a second insulating film.

In the same field of endeavor, Takeuchi teaches an electret film being electretized ("electret film EL composed of a dielectric to which a certain amount of electrostatic charge is fixed"; '202 col. 1 lines 61-62), and covering the upper and side surfaces of the [wiring film] ('202 Figs. 2-4 'IL2'; *wherein Takeuchi teaches use of a wiring film as one of the electrodes, rather than the electretized insulating film*) with an insulative protecting film (Figs. 2-4, 'PF') for the benefit of protecting the device from contamination.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johannsen et al. (US PGPub 2002/0181725 ('725)) in view of Takeuchi (US Patent 7,039,202 ('202)) (already of record) as applied to claim 6 above, and further in view of Majamaa (Effect of Oxidation Temperature on the Electrical Characteristics of Ultrathin Silicon Dioxide Layers Plasma Oxidized in Ultrahigh Vacuum) (henceforth referred to as *Majamaa*).

Regarding claim 7, the combination of Johannsen and Takeuchi remains as applied above.

Takeuchi further teaches the insulating films being a silicon dioxide film ("The insulating films IF1 and IF2 are, for example, an oxide film or nitride film"; '202 col. 2 lines 8-9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a silicon dioxide film as taught by Takeuchi as the first insulating film taught by Johannsen for the benefit of using common semiconductor manufacturing processes to create the microphone

Neither Johannsen nor Takeuchi explicitly teach the film being grown in an atmosphere at a temperature in a range between 500 °C and 800 °C, both inclusive.

In the same field of endeavor, Majamaa teaches growth of silicon dioxide layers in a temperature range from "room temperature to 800 °C" (*Majamaa* abstract) for the benefit of growing a specific oxidation layer thickness.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the temperature range taught by Majamaa in the growth of a silicon oxide layer as taught by the combination of Loeppert and Takeuchi for the benefit of growing a specific oxidation layer thickness.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johannsen et al. (US PGPub 2002/0181725 ('725)) in view of Takeuchi (US Patent 7,039,202 ('202)) (already of record) as applied to claim 6 above, and further in view of Ross (Effects of Silicon Nitride Growth Temperature on Charge Storage in the MNOS Structure) (henceforth referred to as *Ross*).

Regarding claim 8, the combination of Johannsen and Takeuchi remains as applied above.

Takeuchi further teaches the insulating films being a silicon nitride film ("The insulating films IF1 and IF2 are, for example, an oxide film or nitride film"; '202 col. 2 lines 8-9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a silicon nitride film as taught by Takeuchi as the second insulating film taught by Takeuchi for the benefit of using common semiconductor manufacturing processes to create the microphone

Neither Johannsen nor Takeuchi explicitly teach the film being grown in an atmosphere at a temperature in a range between 600 °C and 800 °C, both inclusive.

In the same field of endeavor, Ross teaches growth of silicon nitride in the temperature range of 650 °C to 1100 °C for the benefit of varying the charge stored in the nitride layer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the temperature range taught by Ross to grow a silicon nitride layer as taught by the combination of Johannsen and Takeuchi for the benefit of varying the charge stored in the nitride layer.

12. Claims 6 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agneus et al. (US Patent (4,142,073).

Regarding claim 6, Agneus teaches an electret condenser ("electret microphone"; '073 title), comprising: a first electrode ('073 #3; "metallic base plate 3"), a second electrode ('073 #4; "metallic layer 4"); and a first insulating film ('073 #2; "second plastic film 2) which is formed between the first electrode (#3) and the second electrode (#4) and is electretized ("the other plastic film 2 is polarized so as to contain electret charges"; '073 col. 1 lines 60-61), wherein a [upper] surface of the first insulating film (#2) is covered with the second electrode (*while the Figure illustrates the #4 as being on the upper side of #2, the terms "upper" and "lower" are relative to the orientation of the device, and merely turning the device over would result in the "lower surface of the first insulating film [being] covered with the second electrode"*) and upper and side surfaces of the first insulating film (#2) are covered with a second insulating film ('073 #1; "first plastic film 1").

Regarding claim 9, Agneus remains as applied above.

Agneus further teaches the second electrode (#4), the first insulating film (#2), and the second insulating film (#1) composing a vibrating film ("a movable electrode"; '073 col. 1 line 55).

Regarding claim 10, Agneus remains as applied above.

Agneus further teaches a shape in plan of the first insulating film (#2) being smaller than a shape in plan of [a] vibrating film ("plastic film 2 is given a smaller area

than the underlying metallic base plate 3"; '073 col. 2 lines 30-31), and the first insulating film (#2) is arranged at a central part of the vibrating film ("and is concentrically fixed to this by the metalized plastic film 1"; '073 col. 2 lines 31-32).

Response to Arguments

13. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JESSE A. ELBIN whose telephone number is (571)270-3710. The examiner can normally be reached on Monday through Friday, 9:00am to 6:00pm EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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